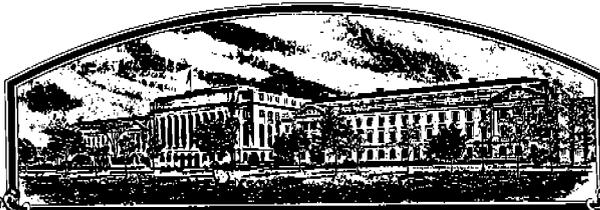


No.

7500089



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Terra Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *seventeen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (7 U.S.C. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COTTON

'Deltapine SR-4'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 18th day of June in the year of our Lord one thousand nine hundred and seventy-six.

Attest

Kenneth ...

Acting
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block

Secretary of Agriculture

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1. VARIETY NAME OR TEMPORARY DESIGNATION Deltapine SR-4	2. KIND NAME Cotton	FOR OFFICIAL USE ONLY	
		PV NUMBER 7500089	
3. GENUS AND SPECIES NAME Gossypium hirsutum	4. FAMILY NAME (Botanical) Malvaceae	FILING DATE 5-19-75	TIME 10 A.M.
	5. DATE OF DETERMINATION October 1965	FEE RECEIVED \$ 250.00	BALANCE DUE \$ -
\$ 250.00		\$ -	
\$ 250.00		\$ -	
6. NAME OF APPLICANT(S) Delta & Pine Land Company	7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Scott, Mississippi 38772	8. TELEPHONE AREA CODE AND NUMBER (601) 742-3351	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Corporation		10. STATE OF INCORPORATION Mississippi	11. DATE OF INCORPORATION April 29, 1886

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:

**Research Department
Delta & Pine Land Company
Scott, Mississippi 38772**

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- 13B. Exhibit B, Botanical Description of the Variety
- 13C. Exhibit C, Objective Description of the Variety
- 13D. Exhibit D, Data Indicative of Novelty
- 13E. Exhibit E, Statement of the Basis of Applicant's Ownership

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? (See Section 83(a). (If "Yes," answer 14B and 14C below.) YES NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations? YES NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed? FOUNDATION REGISTERED CERTIFIED

The applicant declares that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) of this sexually-reproduced novel plant variety believes that the variety is distinct, uniform, and stable as required in Section 41 and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant is informed that false representation herein can jeopardize protection and result in penalties.

16 May 1975
(DATE)

16 May 1975
(DATE)

Early Christy V. Pres.
(SIGNATURE OF APPLICANT)
Delta & Pine Land Company
By W. L. Daniel, Pres.
(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and \$250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, 6525 Belcrest Road, Hyattsville, Maryland 20782. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Insert the date the applicant determined that he had a new variety based on the definition in Section 41 (a) of the Act and decision is made to increase the seed.
- 13a First, give the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. Second, give the details of subsequent stages of selection and multiplication. Third, indicate the type and frequency of variants during reproduction and multiplication and state how these variants may be identified. Fourth, provide evidence on stability.
- 13b First, give any special characteristics of the seed and of the plant as it passes through the seedling stage, flowering stage and the fruiting stage. Second, describe the mature plant and compare it with a similar commercial variety grown under the same conditions, and indicate the differences.
- 13c A supplemental form will be furnished by the PVPO to describe in detail a variety for each kind of seed.
- 13d Provide complete data indicative of novelty. Seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty may be submitted. Seeds submitted may be sterile.
- 13e Indicate whether applicant is the actual breeder, the employer of the breeder, the owner through purchase or inheritance, etc.



EXHIBIT A

Revision of November 14, 1975 to Delta & Pine Land Company's
Application for Deltapine SR-4, (75 000 89).

Origin and Breeding History

Deltapine SR-4 originated from a progeny selection program in the F₂ population arising from a 1963 cross of Deltapine 5835-91-01 x Deltapine 62204, (Deltapine Smooth Leaf x Rex) x (Gregg 35 x Rex). Selections were made through the F₃ generation.

First test results were obtained from an 8 replicate randomized complete block design test in 1967 repeated during the consecutive years from New Strains, Advanced Strains to Variety Tests.

This variety has been carefully selected over a number of generations as explained in the first of this section so that the characters described in "Exhibit D" are demonstratively repeated in each generation within the variations caused by environmental differences. In order to assure this stability, plants of this variety are reselected at frequent intervals, grown in progeny rows, checked in progeny tests and the variety reconstituted by bulking lines which are characteristic of the variety. This variety was tested under the designation Deltapine 6311-466-52.

The line 6311-466-52 originated from the same cross as Deltapine SR-2 (6311-430-51).

Six hundred forty-three plants of this variety were classified in the summer of 1975 and variation in smoothness of leaf (Deltapine Smooth Leaf) type was found. Approximately sixty percent of the plants in Deltapine SR-4 have a smooth leaf forty percent are hairy.

EXHIBIT B

Amendment of November 10, 1975 to Delta & Pine Land Company's Application for Deltapine SR-4, No. 7500089

Botanical Description

This is a variety of upland cotton Gossypium hirsutum. The root system is extensive; stem erect branching; leaves medium size green; flower cream; pollen cream; fruit medium sized, round, pointed, storm resistant; seed coat is black; linters gray-green.

Table III of Exhibit D gives averages from replicated tests comparing Deltapine SR-4 with Deltapine SR-2 and Paymaster 111 in the years 1968-1972. Comparisons of Deltapine SR-4 are also made with Deltapine SR-2 and Stripper 31 in the years 1973-1974. Comparisons with Deltapine SR-2 are summarized in Exhibit D.

These data indicate that Deltapine SR-4 is a high yielding variety exceeding Paymaster 111 by 5% and exceeding Stripper 31 by 12%. Its lint percentage is slightly higher than Paymaster 111 and Stripper 31. Its micronaire is similar to Paymaster 111 and slightly lower than Stripper 31. The storm resistance (SR) is greater than Paymaster 111 and slightly higher than Stripper 31. The fiber tensile strength is slightly higher than Paymaster 111 and about equal to Stripper 31. Its fiber length is shorter than Paymaster 111 but longer than Stripper 31.

(I am not certain that the above paragraph belongs in Exhibit B but Exhibit D has been limited to a comparison with the variety it most nearly resembles.)

The leafiness (volume or density of leaf) shows a slight difference in the average of the indices but this is not consistent from year to year and therefore lacks significance.

OBJECTIVE DESCRIPTION OF VARIETY
COTTON (*GOSSYPIUM* SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Delta & Pine Land Company	FOR OFFICIAL USE ONLY PVPO NUMBER 7500089
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Scott, Mississippi 38772	VARIETY NAME OR TEMPORARY DESIGNATION Deltapine SR-4

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

1. SPECIES:

1 = GOSSYPIUM HIRSUTUM 2 = GOSSYPIUM BARBADENSE

2. AREA(S) OF ADAPTION (0 = Not Tested, 1 = Not Adapted, 2 = Adapted):

EASTERN DELTA CENTRAL HIGH PLAINS EL PASO AREA
 WESTERN LOW HOT VALLEYS SAN JOAQUIN OTHER (Specify)

3. MATURITY (50% Open Boll):

<input type="text" value=""/>	<input type="text" value=""/>	NO. OF DAYS EARLIER THAN	<input type="text" value=""/>	} 1 = COKER 310 2 = DELTAPINE 16 3 = STONEVILLE 213 4 = PAYMASTER 111 5 = ACALA 1517-70 6 = ACALA SJ-1 7 = LANKART 57 8 = OTHER (Specify)
<input type="text" value=""/>	<input type="text" value=""/>	NO. OF DAYS LATER THAN	<input type="text" value=""/>	

4. PLANT HABIT:

1 = SPREADING 2 = INTERMEDIATE 3 = COMPACT 1 = FOLIAGE SPARSE 2 = DENSE
3 = OTHER (Specify)

5. PLANT HEIGHT:

<input type="text" value="4"/>	CM. SHORTER THAN	<input type="text" value="8"/>	} 1 = COKER 310 2 = DELTAPINE 16 3 = STONEVILLE 213 4 = PAYMASTER 111 5 = ACALA 1517-70 6 = ACALA SJ-1 7 = LANKART 57 8 = OTHER (Specify) Deltapine SR-2
<input type="text" value=""/>	CM. TALLER THAN	<input type="text" value=""/>	

6. MAIN STEM:

1 = LAX 2 = ASCENDING 3 = ERECT CM. TO FIRST FRUITING BRANCH NO. OF NODES TO FIRST FRUITING BRANCH (from cotyledonary node)

7. LEAF:

CM. WIDTH OF WIDEST LEAVES AT MATURITY

8. LEAF PUBESCENCE:

1 = GLABROUS (HAIRS AS SPARSE AS D₂ SMOOTH) 2 = SMOOTH LEAF (DELTAPINE SMOOTH LEAF) 3 = PUBESCENT (STONEVILLE 213)
4 = HEAVY PUBESCENCE (H₁ OR H₂) 5 = OTHER (Specify) Intermediate 2-3

9. LEAF COLOR:

1 = VIRESCENT YELLOW 2 = LIGHT GREEN 3 = DARK GREEN (Acala-442) 4 = RED
5 = OTHER (Specify)

10. LEAF TYPE:

1 = NORMAL 2 = OKRA 3 = SUPER OKRA 4 = OTHER (Specify)

11. FLOWER:

1 = NECTARILESS 2 = NECTARIED
 Petals: 1 = CREAM 2 = YELLOW Pollen: 1 = CREAM 2 = YELLOW

12. FRUITING BRANCH TYPE:

1 = CLUSTER 2 = SHORT 3 = NORMAL 1 = DETERMINATE 2 = INDETERMINATE

13. GOSSYPOL CONDITION:

1 = GLANDLESS 2 = REDUCED GLANDS 3 = NORMAL GLANDS 1 = NORMAL BUD GOSSYPOL
4 = OTHER (Specify) 2 = HIGH BUD GOSSYPOL

14. SEEDS:

± SEED INDEX (Fuzzy seed basis) Seed Fuzz: 1 = SPARSE (GREGG 35) 2 = MODERATE (DPL-16)
3 = HEAVY (ACALA SJ-1) 4 = OTHER (Specify)

EXHIBIT D

Amendment of November 10, 1975 to Delta & Pine Land Company's Application for Deltapine SR-4, No. 7500089

Data Indicative of Novelty (Deltapine Strain 6311-466-52)

This strain was derived from the same cross (6311) as Deltapine SR-2. These two lines are represented by two separate selections in the F₂ block of 1965. As might be expected, Deltapine SR-4 most closely resembles Deltapine SR-2. It differs from it in the following respects (See Table 1).

Yield: The advantage of Deltapine SR-4 over Deltapine SR-2 averages 7% in eight years of testing. A total of eleven tests are included in this average. All tests in a single year being combined and considered as a single figure representing that year in the final average. Please refer to Table 1A where it can be seen that in only one year and one test, 1972, Deltapine SR-4 did not lead in yield. Although a combined statistical analysis of varieties and yields has not been made the consistency of the yield advantage make it statistically significant. A 7% yield advantage is of great practical significance.

The lint percentage difference 0.6% is small but again it is consistent. This accounts for about one-third of the yield advantage of Deltapine SR-4.

The plant height of Deltapine SR-4 is less than that of Deltapine SR-2. This difference is measured subjectively by an index in the variety tests for eight years and in centimeters (3.7) in one test (1974) and shown in Table III, Exhibit C.

Storm resistance (SR) indices show Deltapine SR-4 to have slightly less storm resistance than Deltapine SR-2 (3.5 vs 3.9).

With the exception of 2.5% span length 1.00 inch for Deltapine SR-4 vs 1.03 inch for Deltapine SR-2 the fiber properties of the two varieties are not significantly different.

Novelty for Deltapine SR-4 as compared to its sister strain Deltapine SR-2 is claimed on the basis of yield +7%, lint percentage +0.6, shorter plant 3.7 cm., and shorter fiber length -.03 inch.



DELTA & PINE LAND COMPANY

OF MISSISSIPPI

Originators of Deltapine Cotton Varieties

PHONE (601) 742-3351

Scott, Mississippi 38772

April 5, 1976

Mr. Joseph Higgins
Plant Variety Protection Office
USDA - AMS - Grain Division
6525 Belcrest Road
Hyattsville, Maryland 20782

Dear Joe:

Subject: Cotton Application No. 7500089 (Deltapine SR-4). Refer to your letter of 23 February 1976

Paragraph 4 refers to the novelty claim for a shorter plant for Deltapine SR-4 as compared to Deltapine SR-2. This claim is based on subjective data and on the 1974 measurement which are 69.19 cm. for Deltapine SR-2 vs 65.48 cm. for Deltapine SR-4 (Deltapine 6311-466-52). This is a difference of 3.71 cm, somewhat less than the LSD of 4.42 cm. The 1975 results for plant height show Deltapine SR-2 to be 66 cm. and Deltapine SR-4 to be 58 cm., a difference of 6 cm.

Table II - Exhibit D shows subjective ratings averaging 1.8 for Deltapine SR-4 vs 2.2 for Deltapine SR-2. This covers a period from 1968 to 1972. In the 1975 crop year I rated a number of tests for plant height:

<u>Test No.</u>	<u>SR-4</u>	<u>SR-2</u>	<u>Difference</u>
75-4-03	2.0	2.5	+ .5
04	2.0	2.3	+ .3
05	1.6	2.3	+ .7
06	1.6	3.1	+1.5
09	1.5	2.1	+ .6
10	1.9	2.1	+ .2

The ratings were made by me personally (I'm not necessarily more accurate than anyone else but I have been doing this for 25 years and have confidence in the ratings).

Mr. Joseph Higgins
 Page 2
 April 5, 1976

Paragraph 5 of your letter discusses the lint percentage of Deltapine SR-4. I have gone back over all the test results in our application (Table III, Exhibit D) and recorded the lint percentages. I have also gotten the data from last year's tests (1975). There are 14 tests over 9 years. I believe that in cases like this one should average years rather than tests. As one goes along in a testing program later years have more tests and get a heavier weighting than earlier years if you don't. If one assumes that climatic conditions or insect populations are major environmental influences related to years one could mislead himself by looking at an average of tests instead of years. At the same time each test should be looked at carefully.

The table below gives the test and year results and averages.

<u>Test</u>	<u>Difference</u>	<u>Years Avg.</u>	
1967 Lubbock NS	1.7	1.7	
1968 Lubbock AS	0.5	0.5	
1969 Lubbock VT	0.6	0.6	
1970 Lubbock VT	0.1	0.1	
1971 Lubbock VT	0.7	0.7	
1972 Lubbock VT	0.5	0.5	
1973 Lubbock VT	0.4	1.0	
1973 Plainview VT	1.7		
1974 Lubbock VT	-1.8	+.2	
1974 Plainview VT	0.8		
1974 Denver City VT	1.6		
1975-4-09	-0.8	0.0	
1975-4-05	-0.9		
1975-4-06	+0.1		
Averages of: 14 tests	+.5	9 years	+.6

This indicates to me that the difference although small is significant. From the practical standpoint if the yield were a bale per acre the seed cotton harvested would be (at 20% lint) 2500#, 0.6% of this would be 15#. This isn't much but at today's prices it is \$6 per acre and would pay the cost of the seed.

Paragraph 6 relates to yield. A table for the same tests as for lint percentage shows:

Mr. Joseph Higgins
 Page 3
 April 5, 1976

<u>Test</u>	<u>SR-4 % of SR-2</u>		<u>LSD @ .05</u> <u>% of SR-2</u>
1967 Lubbock NS	105.5	+ 5.5	6.9
1968 Lubbock AS	114.0	+14.0	14.2
1969 Lubbock VT	120.6	+20.6	38.9
1970 Lubbock VT	109.5	+ 9.5	30.2
1971 Lubbock VT	104.9	+ 4.9	N.A.
1972 Lubbock VT	89.1	-10.9	10.9
1973 Lubbock VT	108.3	+ 8.3	9.3
1973 Plainview VT	106.3	+ 6.3	12.0
1974 Lubbock VT	106.9	+ 6.9	15.0
1974 Plainview VT	107.9	+ 7.9	16.2
1974 Denver City VT	94.2	- 5.8	16.5
1975-4-09	106.2	+ 6.2	N.A.
1975-4-05	Not Available		
1975-4-06	"	"	

12 tests 9 years

As you mentioned in your letter we have few tests in which the differences are as much as the LSD's but these LSD's are calculated for all entries in the test. The fact that Deltapine SR-4 outyielded Deltapine SR-2 in 8 out of 10 tests or in 7 out of 8 years averaging a 7% increase seems to be significant.

I'll ask one of my statistician friends if I can pull the two varieties concerned out of the tests and analyze the results statistically to see whether this comparison is more significant. This is going to take some time to go back to 1967 and try to find the original data.

If one averages percentages the result can often be misleading if the base on which the percentages are calculated varies, as with fluctuating yields. Therefore it is better to use lint per acre and then get the percentages based on the actual pounds over a period of time. These figures are:

Mr. Joseph Higgins
 Page 4
 April 5, 1976

<u>Test</u>	<u># Lint SR-2</u>	<u># Lint SR-4</u>	
1967 Lubbock NS	693	731	
1968 Lubbock AS	472	537	
1969 Lubbock VT	435	525	
1970 Lubbock VT	559	612	
1971 Lubbock VT	113	122	
1972 Lubbock VT	515	459	
1973 Lubbock VT	698	756	
1973 Plainview VT	761	809	730 782
1974 Lubbock VT	407	435	
1974 Plainview VT	482	520	456 469
1974 Denver City VT	479	451	
1975-4-05	<u>307</u>	<u>326</u>	
	5921	6283	3973 4237

by tests 106%, by years 107%

This difference of 7% is the one upon which our claim for novelty is based.

The following data was taken for the different varieties in 1975 and this additional data is presented in the attached tables.

- Plant Height (cm.)
- Width of widest leaves at maturity (cm.)
- CM. to First Fruiting Branch
- Node to the First Fruiting Branch
- Diameter of Boll
- Seed Fuzz

As more data becomes available, should the averages be recalculated annually and should the novelty claim be adjusted accordingly?

I don't have the ANOV on the above data nor on yield where I have pulled the two varieties in question to be analyzed by themselves. This will be sent to you later.

Your Paragraph 7 mentions fiber length differences. I believe this amount claimed -.03 inch is of practical significance (about 1/32 of an inch) which difference corresponds with a price differential in market quotations. A comparison of staple lengths is given below:

Mr. Joseph Higgins
 Page 5
 April 5, 1976

<u>Test</u>	<u>Length SR-2</u>	<u>Length SR-4</u>	<u>Difference</u>
1967 Lubbock NS	1.09	1.05	-.04
1968 Lubbock AS	1.03	1.03	.00
1969 Lubbock VT	1.04	1.01	-.03
1970 Lubbock VT	1.03	1.02	-.01
1971 Lubbock VT	.95	.92	-.03
1972 Lubbock VT	1.05	1.00	-.05
1973 Lubbock VT	.99	.93	-.06
1973 Plainview VT	1.04	1.00	-.04
1974 Lubbock VT	.99	1.00	.01
1974 Plainview VT	1.06	1.06	.00
1974 Denver City VT	1.06	1.03	-.03
			-.0275

I don't believe a statistical analysis separating these two varieties from the others will give us any better information.

Paragraph 8. The 1975 data on seed fuzz shows Deltapine SR-2 to be rated sparse while Deltapine SR-4 is rated medium. This differs from 1974 where both are rated sparse. No claim for novelty is made for seed fuzz in Exhibit D.

Paragraph 9. We feel that the novelty claims which we have made in our application are based on significant differences that are reproducible and ask that you consider the presentations in this letter in reaching a conclusion as to novelty.

Also in paragraph 9 you mentioned other varieties having similar characteristics to those of Deltapine SR-4. I'm really not familiar with any of them and to my knowledge they have never been directly compared with Deltapine SR-4. Some appear to be varieties developed in the Mid-South (Louisiana 33 and Earlycot 32). I have never heard of Stripper 31WR. Many of the Texas varieties have familiar names but the specific varieties I am not familiar with.

Our reason in sending you such a lot of test information is not to "snow" you but rather to put on record all the different comparisons we know of.

TABLE I

Average of Seven Tests - 1967-1974

<u>Agronomic Characteristics</u>		<u>Deltapine SR-2</u>	<u>Deltapine SR-4</u>
Yield per acre	Lbs.	497	530
% of Check	%	CK	107
Lint %	%	21.8	22.4
Plant Height	Index	2.3	2.0
Storm Resistance	Index	3.9	3.5
Leafiness	Index	2.1	2.3
 <u>Fiber Characteristics</u>			
2.5% Span Length	In.	1.03	1.00
Length Uniformity	%	44	44
Micronaire	Index	3.8	3.8
Strength 1/8 in. gauge	gm/tex	23.2	22.8
Fiber Elongation	%	7.2	7.6

EXHIBIT D - Continued

DELTA & PINE LAND COMPANY'S APPLICATION FOR DELTAPINE SR-4

Data Indicative of Novelty (Deltapine Strain 6311-466-52)

In 1974 a separate series of comparisons between Deltapine SR-4 and other varieties was made in a series of demonstration tests. These tests consists of large replicated plots on farmers' fields. Several varieties not included in our regular tests appear in these comparisons. For the purpose of Exhibit D average results (Table IV) for only Deltapine SR-2 and Deltapine SR-4 are shown although a complete copy of the report (Exhibit 1) is attached.

TABLE IV

1974 DEMONSTRATION TEST AVERAGES

Units Replications	YIELD PER ACRE			Percent	Stand	Earliness		Stelometer		F3
	Seed	Lint	Check	Lint	1st Pick	1st Pick	1/8 in	gauge		
	Cotton			pct			pct	Strength	Elong.	
lbs	lbs	pct	pct	pct	lbs	pct	gm/tex	pct		

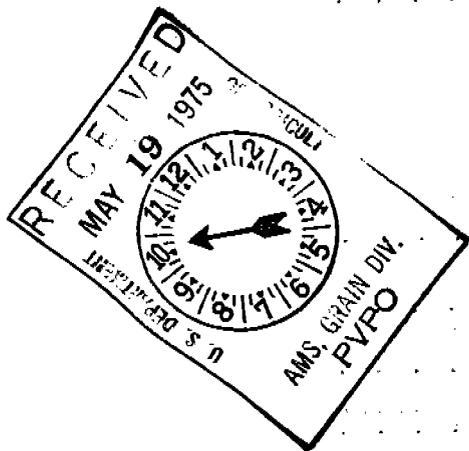


TABLE II

Units	
Replications	
DELTAPINE SR-2	
1967	
1968	
1969	
1970	
1971	
1972	
1973 (2 tests)	
1974 (3 tests)	
Avg. 11 tests 8 years	
DELTAPINE SR-4	
1967	
1968	
1969	
1970	
1971	
1972	
1973 (2 tests)	
1974 (3 tests)	
Avg. 11 tests 8 years	

EXHIBIT E

DELTA & PINE LAND COMPANY'S APPLICATION FOR DELTAPINE SR-4

Applicant's ownership is based on fact that breeder is an employee of applicant and has executed an assignment of Plant Variety Rights to Delta & Pine Land Company.

FORM GR-470-B (REVERSE)

15. BOLLS:

2 Locules: 1 = 3-4
 2 = 4-5
 3 1 NO. SEEDS PER BOLL
 2 2 3 LINT PERCENT
 3 8 MM. DIAMETER
 1 Pitted: 1 = NONE
 2 = FINELY
 3 = COARSELY
 5 2 0 GRAMS SEED COTTON PER BOLL
 2 Breadth: 1 = BROADER AT BASE
 2 = BROADER AT MIDDLE
 2 Type: 1 = STORMPROOF (WESTBURN 70)
 2 = STORM RESISTANT (LANKART 57)
 3 = OPEN (DELTAPINE 16)
 3 Shape: 1 = LENGTH < WIDTH
 2 = LENGTH = WIDTH
 3 = LENGTH > WIDTH

16. BRACTEOLAS:

1 Breadth: 1 = LENGTH < WIDTH 2 = LENGTH = WIDTH 3 = LENGTH > WIDTH
 2 Teeth: 1 = FINE 2 = COURSE
 2 Teeth: 1 = 3-4 2 = 5-7 3 = 8-10
 4 = OTHER (Specify)

17. YIELD: Compared to-

PERCENT LESS THAN
 5 0 PERCENT MORE THAN
 1 = COKER 310 2 = DELTAPINE 16 3 = STONEVILLE 213
 4 = PAYMASTER 111 5 = ACALA 1517-70
 6 = ACALA SJ-1 7 = LANKART 57

18. FIBER LENGTH (Complete one or more of the following and give the means):

SPAN LENGTH 50%
 1 0 0 SPAN LENGTH 2.5%
 MEAN LENGTH
 3 2 STAPLE LENGTH 32nd INCHES
 UNIFORMITY RATIO (MEAN/U.H.M.)
 4 4 UNIFORMITY INDEX (50% SPAN/2.5% SPAN)
 U.H.M. LENGTH

19. FIBER STRENGTH AND ELONGATION:

0 8 5 1,000 P.S.I.
 3 7 0 MICRONAIRE READING
 7 5 ELONGATION E₁
 YARN STRENGTH (Give test method)
 STILOMETER T₀
 2 2 6 STILOMETER T₁

20. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

1 VERTICILLIUM WILT
 0 BACTERIAL BLIGHT (Race 2)
 0 ANTHRACNOSE
 0 FUSARIUM WILT
 1 ASCOCHYTA BLIGHT
 0 RUST
 0 ROOT KNOT NEMATODE
 0 PHYMATOTRICHUM ROOT ROT
 0 OTHER (Specify)
 0 BACTERIAL BLIGHT (Race 1)
 0 RHIZOCTONIA

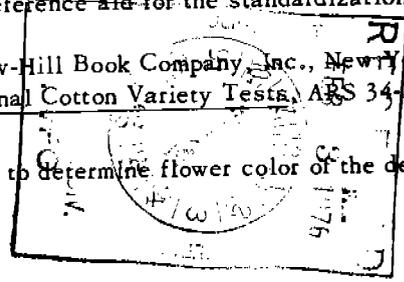
21. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

0 BOLL WEEVIL
 0 FALL ARMYWORM
 0 STINKBUG
 0 OTHER (Specify)
 0 APHID
 0 GRASSHOPPER
 0 THRIP
 0 FLEAHOPPER
 0 LYGUS
 0 CUTWORM
 0 LEAFWORM
 0 PINK BOLLWORM
 0 SPIDERMITTE

REFERENCES: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (1) Brown, Harry B., and J. O. Ware, 1958, Cotton, McGraw-Hill Book Company, Inc., New York.
- (2) Lewis, C. F., and H. H. Ramey, Jr., 1971, 1970 Regional Cotton Variety Tests, ARS 34-130, United States Department of Agriculture.

COLORS: Nickerson's or any recognized color fan may be used to determine flower color of the described variety.



ALL DATA FROM 1974 COTTON VARIETY TEST
LUBBOCK, TEXAS

TEST file SR 4

Data To Support Exhibit C, Plant Variety Protection Application
(Characteristics not usually reported on in our variety test data)

A. Variety or Strain DELTAPINE SR-4 (6311-466-52)
 B. Date of Report _____

Should be made in August when plants are vegetatively mature but still have leaves, etc.

Make the comparisons in a variety test using all of our protected varieties and at least one of ours and one of someone else's that appears on Exhibit C of the PVP form, Item 5.

C. Plant Height (Item 5)

Cm. Height Total

Variety	Rep	1	2	3	4	5	6	7	8	Avg.
Coker 5110		73.0	71.1	71.5	67.6	72.9	73.7	64.3	76.2	71.29
Deltapine 16		74.9	74.1	79.5	66.6	73.7	70.9	67.3	73.2	72.53
6431-515-66										
6434-513-66										
6431-515-66		73.7	69.2	67.6	69.3	59.2	63.3	63.5	65.3	66.39
6434-513-66		66.3	71.3	77.5	54.6	66.0	69.1	65.3	66.8	67.11
6431-515-66										
Our protected varieties										
Deltapine SR-2		65.4	70.5	76.2	66.0	70.1	63.5	71.9	69.9	69.19
Deltapine SR-1		62.2	81.3	69.9	58.4	63.5	71.1	53.3	69.1	66.10
6311-466-52										
New Strains in (A) above										
6311-466-52		66.7	68.9	67.6	61.7	62.5	71.1	60.5	66.8	65.48
6434-58-61		69.9	67.3	67.7	69.9	66.8	60.2	64.0	63.5	66.16

D. Leaf width should be measured on widest leaves at maturity. These will probably be main stem leaves which will shed after August. Use same varieties as listed in previous table

Amendment to Table 3 - Results From Various Tests 1967-1974 of
Exhibit D, Application No. 7500089, Cotton, Deltapine SR-4

Results of Statistical Analyses of the Yield of Most Tests for Yield Comparisons
of Deltapine SR-4 Appearing in Table 3

<u>1968 Lubbock Advanced Strains Test</u>	*
CV = 11%	
LSD ₀₅ = 48# per acre	
Mean yield of test = 437# per acre	
<u>1969 Lubbock Variety Test</u>	*
CV = 14%	
LSD ₀₅ = 67# per acre	
Mean yield of test = 494# per acre	
<u>1970 Lubbock Variety Test</u>	n. s.
CV = 27%	
LSD ₀₅ = 169# per acre	
Mean yield of test = 634# per acre	
<u>1972 Lubbock Variety Test</u>	* SR-2
CV = 12.9%	
LSD ₀₅ = 56# per acre	
Mean yield of test = 408# per acre	
<u>1973 Lubbock Variety test</u>	n. s.
CV = 9.1%	
LSD ₀₅ = 65# per acre	
Mean yield of test = 723# per acre	
<u>1973 Plainview Variety Test</u>	n. s.
CV = 8.5%	
LSD ₀₅ = 91# per acre	
Mean yield of test = 759#	
<u>1974 Lubbock Variety Test</u>	n. s.
CV = 14.7%	
LSD ₀₅ = 61# per acre	
Mean yield of test = 422# per acre	
<u>1974 Plainview Variety Test</u>	n. s.
CV = 11.6%	
LSD ₀₅ = 78# per acre	
Mean yield of test = 475# per acre	
<u>1974 Denver City Variety Test</u>	n. s.
CV = 12.3%	
LSD ₀₅ = 79# per acre	
Mean yield of test = 454# per acre	

ASSIGNMENT

The undersigned (the "Seller"), for good and valuable consideration hereby assigns to TERRA CHEMICALS INTERNATIONAL, INC., a Delaware corporation, and its successors and assigns (the "Buyer"), all of the undersigned's right, title and interest in and to all of the Seller's breeding rights to all generations of "stripper type" cotton seed now owned by the Seller, including, but not limited to, those described on Schedule 1 annexed hereto, and any varieties pending registration, all experimental varieties either in the increase stage or in the laboratory testing stage and all research (including such data as may be on computers), strains and materials.

This instrument is being executed in order to record the assignment described herein with the Plant Variety Protection Office of the Department of Agriculture pursuant to Section 2531(d) of Title 7 of the United States Code and the regulations promulgated thereunder.

IN WITNESS WHEREOF, the Seller has caused this Assignment to be executed on its behalf by its duly authorized officer on this 31 day of March, 1983.

DELTA PINE LAND COMPANY

By 
F.W. Canfield

STATE OF TENNESSEE

COUNTY OF SHELBY

Before me, a Notary Public, in and for said State and County, duly commissioned and qualified, personally appeared F. W. CANFIELD, known to me to be the person whose name is subscribed to the foregoing instrument and known to me to be the Financial Vice President of DELTA AND PINE LAND COMPANY, a corporation, and acknowledged to me that he executed said instrument for the purposes and consideration therein expressed, and as the act of said corporation.

Given under my hand and seal of office this 3^d day of March, 1983.

Louise Webb

Notary Public

My commission expires:

My Commission Expires March 17, 1986

Cotton Seed Varieties of Delta and Pine Land
Company for which Certificates have been issued

<u>Variety</u>	<u>Certificate No.</u>	<u>Certificate Date</u>
Deltapine SR-1	7200042	6/27/75
Deltapine SR-2	7200043	6/27/75
Deltapine SR-4	7500089	6/17/76
Deltapine SR-5	8000052	12/18/80
Deltapine SR-980	8100098	11/19/81
Deltapine SR-482	8200067	7/15/82
Deltapine SR-383	8200137	12/30/82

ASSIGNMENT

The undersigned (the "Sellers"), for good and valuable consideration, hereby sells, assigns and transfers to Summit Seed Company, Inc., a Texas corporation, and its successors and assigns (the "Buyer") all of the undersigned's right, title and interest in and to the following plant varieties:

- Certificate Number 8400088, Terra SR-10
- Certificate Number 7200043, Deltapine SR-2
- Certificate Number 7500089, Deltapine SR-4
- Certificate Number 8000052, Deltapine SR-5
- Certificate Number 8200137, Deltapine SR-383
- Certificate Number 8200067, Deltapine SR-482
- Certificate Number 7200042, Deltapine SR-1
- Certificate Number 8100098, Deltapine SR-980

This instrument is being executed in order to record the assignment described herein with the Plant Variety Protection Office, the Department of Agriculture pursuant to Section 2531(d) of Title 7 of the United States Code and Regulations promulgated thereunder.

IN WITNESS WHEREOF, the Sellers have caused this Assignment to be executed on their behalf by their duly authorized officers effective on the 27th day of August, 1986.

COPY

TERRA SEED COMPANY

By: Gregory J. Duerksen
Gregory J. Duerksen
Its: Vice President

TERRA INTERNATIONAL, INC.

By: Gregory J. Duerksen
GREGORY J. DUERKSEN
Its: VP, Marketing & Development

STATE OF Iowa §

COUNTY OF Woodbury §

THIS INSTRUMENT ACKNOWLEDGED BEFORE ME on this the 4th day of May, 1988, by Gregory J. Duerksen, Vice President of Terra Seed Company.

Brenda S. Bradley
Notary Public State of Iowa
BRENDA S. BRADLEY, Notary Public
In and for the State of Iowa
My Commission Expires Aug. 18, 1989

STATE OF Iowa §

COUNTY OF Woodbury §

THIS INSTRUMENT ACKNOWLEDGED BEFORE ME on this the 4th day of May, 1988, by Gregory J. Duerksen, Vice President of Terra International, Inc.

Brenda S. Bradley
Notary Public State of Iowa
BRENDA S. BRADLEY, Notary Public
In and for the State of Iowa
My Commission Expires Aug. 18, 1989

BILL OF SALE

DATE: May 6, 1988

SELLER: Summit Seed Company, Inc., a Texas corporation

SELLER'S ADDRESS: 622 28th Street
Lubbock, Lubbock County, Texas 79401

BUYER: West Texas Seed and Delinting, Inc., a Texas corporation

BUYER'S ADDRESS: Box 335
Slaton, Lubbock County, Texas 79364

CONSIDERATION: TEN AND NO/100THS DOLLARS (\$10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged.

PERSONAL PROPERTY: (1) Certain fixed assets of Seller relating to its cotton seed business, including those assets listed on Exhibit "1" attached hereto.

(2) Seller's entire cotton breeding and research program, expressly including the breeding rights to all cotton varieties or strains now owned by Seller, including, but not limited to those registered varieties described in Exhibit "2" attached hereto, the advance experimental strains of cotton varieties listed in Schedule "3" attached hereto and all other experimental strains or varieties either in the increased stage or in the laboratory testing stage, and all research data, strains, crosses, seeds, and materials relating to cotton and/or Seller's cotton seed business.

(3) All of Seller's intellectual property rights, whether registered or not, including, without limitation, trade secrets, software, trademarks, service marks, registered names, copyrights, certificates of plant variety protection, and patents relating to Seller's cotton seed business or the assets conveyed herein, except, however, Seller does not convey any goodwill connected with the name "Summit Seed Co." or any variations thereof and WTS&D shall not have the right to use such name except in sale of existing bags, containers and/or labels bearing the Summit name.

(4) All of Seller's existing inventory of registered and breeder's cotton seed, together with all bags, labels and other containers associated with said inventory of cotton seed, and the right to use the labels, and containers in the course of sale of such inventory.

(5) All of Seller's right, title and interest in any claims, causes of action and judgments relating to Seller's cotton seed business for the assets conveyed herein.

(6) All books, records, and other data relating to Seller's cotton seed business or to the purchased assets, including, without limitation, all customer lists, fixed asset records, purchase orders, invoices, sales orders, correspondence, contract files, sales literature, catalogues, brochures, price lists, and product data.

FOR VALUE RECEIVED Seller sells and delivers the

personal property to Buyer and warrants and agrees to defend
title to the personal property to Buyer against all lawful
claims.

SUMMIT SEED COMPANY, INC., a Texas
Corporation

By: Gary Rea
Gary Rea
Its: President

ATTEST:

Jerry Parker
Jerry Parker, Secretary

EXHIBIT "1"

One John Deere LP Tractor

One Debur Machine

One 10 Saw Table Gin

One Cotton Press

One 10 Saw Eagle Gin

One Lint Cleaner

One Research Gin

One Micronaire Gage

One Smith Air Compressor

One Cotton Stripper

One Acid Delinter

One Saw Gin Condenser

One Four Row Planter with Cones

EXHIBIT "2"

PVP Certificate Number 8400088, Terra SR-10
PVP Certificate Number 7200043, Deltapine SR-2
PVP Certificate Number 7500089, Deltapine SR-4
PVP Certificate Number 8000052, Deltapine SR-5
PVP Certificate Number 8200137, Deltapine SR-383
PVP Certificate Number 8200067, Deltapine SR-482
PVP Certificate Number 7200042, Deltapine SR-1
PVP Certificate Number 8100098, Deltapine SR-980.

EXHIBIT "3"

X41431
X41432
X41427
X41428
X41402
X61003
X61002
X61001
X61004

Any and all other experimental varieties in existence owned by
Summit.

SECURITY AGREEMENT

Date May 6, 1988

WEST TEXAS SEED & DELINTING, INC. P. O. Box 355
(Debtor's Name) Street Address

Slaton Lubbock Texas 79364
City County State

(hereinafter called DEBTOR) for value received hereby grants to

LORENZO STATE BANK
(Secured Party's Name)

(hereinafter called SECURED PARTY) whose address is P. O. Box 490
Street

Lorenzo, Crosby County, Texas 79343
City, County, and State

a security interest in and mortgages to SECURED PARTY the following described property (which hereinafter is referred to as COLLATERAL) to-wit:

All of Debtor's right, title and interest in and to the following Plant Variety Protection Certificates, each in the name of West Texas Seed & Delinting, Inc.

- 1. Certificate No. 8400088, Terra SR-10
- 2. Certificate No. 7200043, Deltapine SR-2
- 3. Certificate No. 7500089, Deltapine SR-4
- 4. Certificate No. 8000052, Deltapine SR-5
- 5. Certificate No. 8200137, Deltapine SR-383
- 6. Certificate No. 8200067, Deltapine SR-482
- 7. Certificate No. 7200042, Deltapine SR-1
- 8. Certificate No. 8100098, Deltapine SR-980

(Note—If COLLATERAL is crops, or oil, gas or minerals to be extracted, or timber to be cut, or if COLLATERAL is to become a fixture, describe in the above space following the description of the COLLATERAL the real estate concerned, and give the name of the record owner hereof.)

to secure DEBTOR'S note to SECURED PARTY dated May 6, 1988, for \$365,000.00

DEBTOR warrants and covenants: (Note—Place checkmark (✓) in the blank space before each statement which applies to this agreement.)

- () COLLATERAL is to be used for personal, family, or household purposes.
- () COLLATERAL is to be used in business other than farming operations.
- () COLLATERAL is equipment used in farming operations, or farm products, or accounts, contract rights or general intangibles arising from or relating to the sale of farm products by a farmer.
- () COLLATERAL is accounts or contract rights and the records concerning same are kept at

- () COLLATERAL is a fixture attached to or to become a fixture attached to the above described land.
- () COLLATERAL is being acquired by DEBTOR from SECURED PARTY or is being acquired with the proceeds of the advance evidenced by this agreement.

DEBTOR'S residence is at:
P. O. Box 355, Slaton, TX 79364
(Address)

COLLATERAL will be kept at:
P. O. Box 355, Slaton, TX 79364
(Address)

DEBTOR'S chief place of business is at:
P. O. Box 355, Slaton, TX 79364
(Address)

or if left blank at address given for DEBTOR.

The warranties, covenants, terms and agreements on the reverse side hereof are incorporated herein and made a part hereof for all intents and purposes. DEBTOR and SECURED PARTY as used in this Security Agreement include the heirs, executors or administrators, successors or assigns of those parties.

SECURED PARTY: DEBTOR:

LORENZO STATE BANK
Name

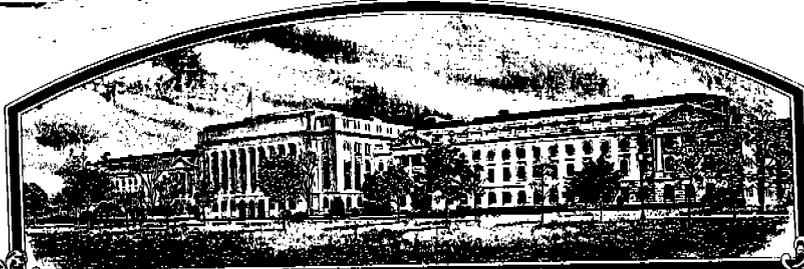
WEST TEXAS SEED & DELINTING, INC.
Name

By Max Joiner
(Signature) (Title)
MAX JOINER, Exec. Vice President

H. R. Donaldson
(Signature) (Title)
H. R. DONALDSON, President

No.

750089



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Delta and Pine Land Company

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *seventeen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

Re: SR-4

COTTON

'Deltapine SR-4'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, DC this 18th day of June in the year of our Lord one thousand nine hundred and seventy-six

Attest:

S. J. Rolfe
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Earl L. Butz
Secretary of Agriculture